Beyond Electronic Registration:

Building A Dynamic Vital Statistics Program

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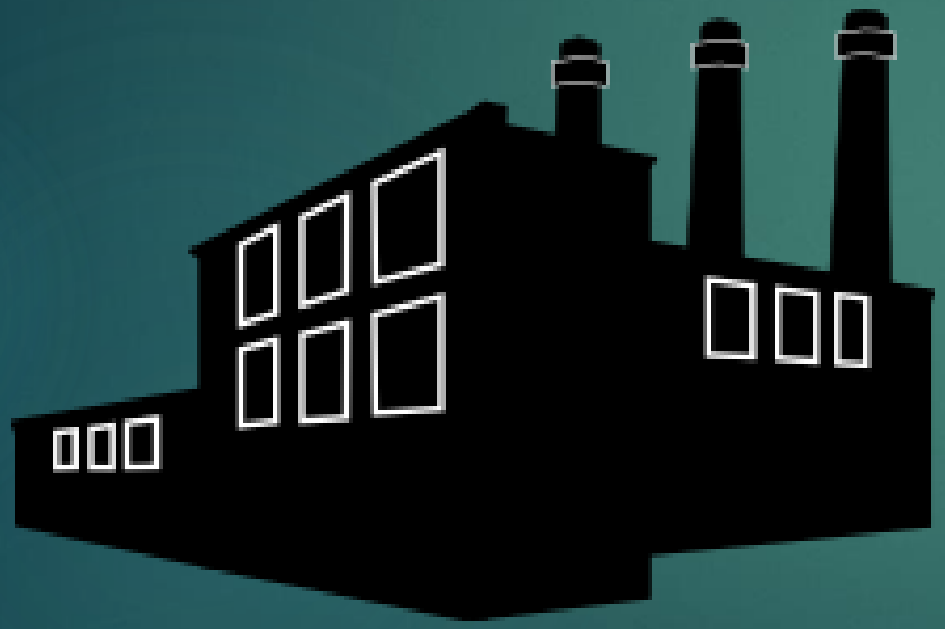
Centers for Disease Control and Prevention

National Center for Health Statistics

Division of Vital Statistics

December 10, 2015

Industrial Economy --> Connection Economy



National Vital Statistics System

- Decentralized, cooperative system of 57 jurisdictions
- Indispensable component of the U.S public health system
- Strength of detail and individual record level data
- Invaluable for:
  - Identifying populations at risk,
  - Program planning,
  - Developing initiatives
  - Developing population estimates

But Is it Dynamic?

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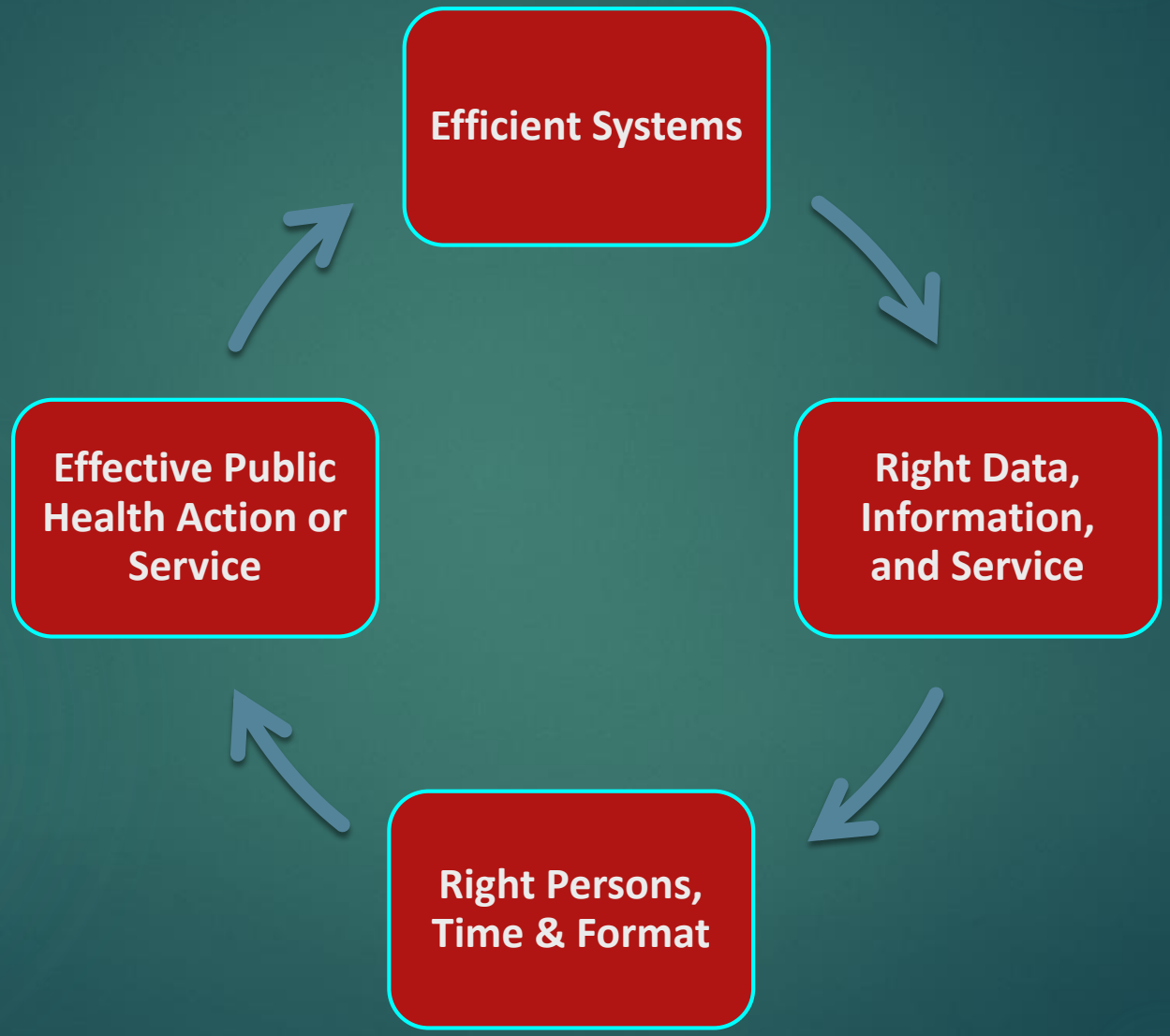
- Uses "lean" business practices in the registration, issuance and amendments of events

Road Map for Dynamic Vital Statistics Systems

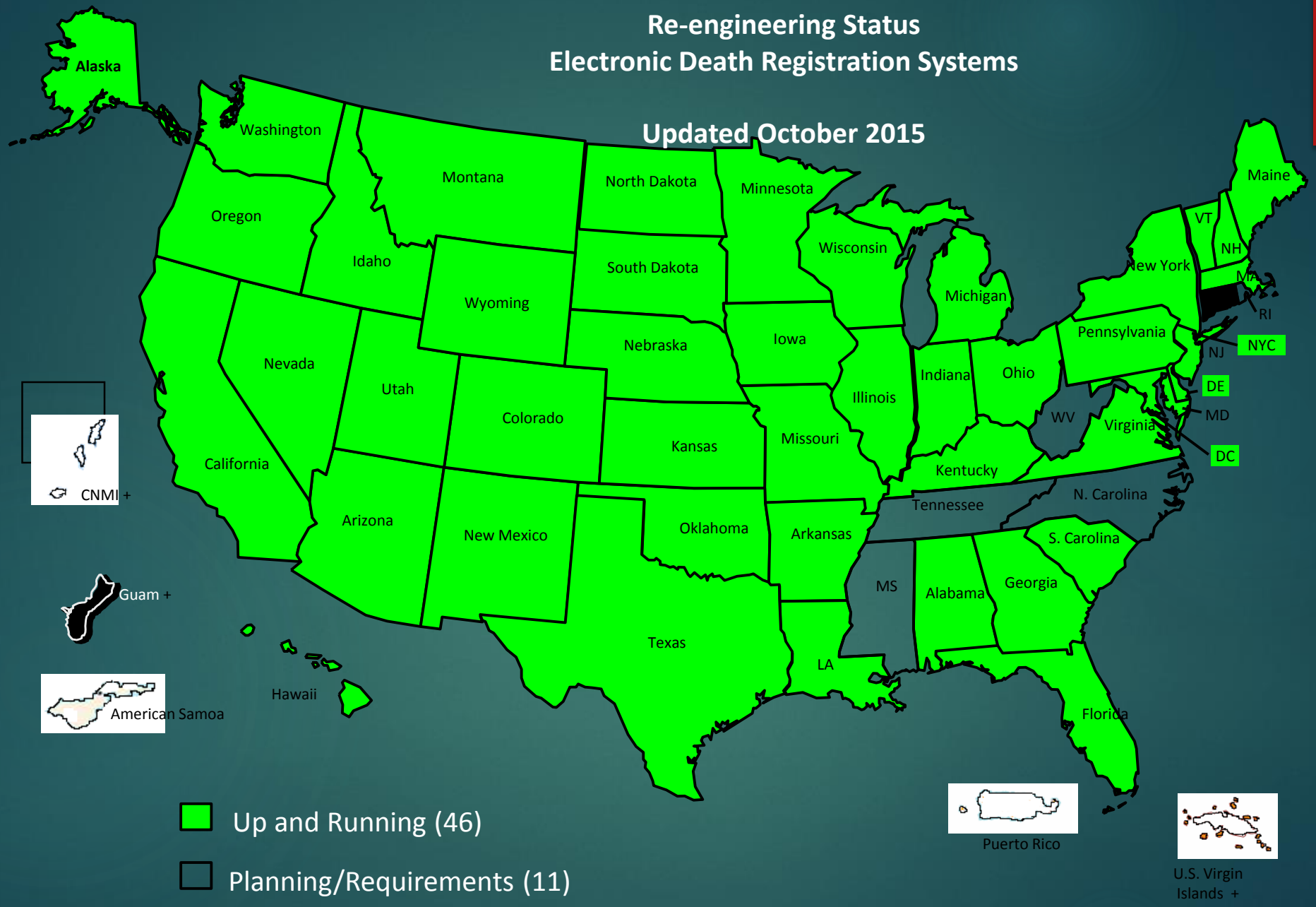


Focus of Today's Discussion

- Electronic Systems: Case of Electronic Death Registration
  - Heightened urgency to make improvements
  - Need for improved timeliness
  - Troubling issue of the quality of cause of death
    - Medical examiners and coroners
  - Use of vital statistics data
    - Statistical reporting
    - Surveillance including disaster surveillance

Re-engineering Status
Electronic Death Registration Systems

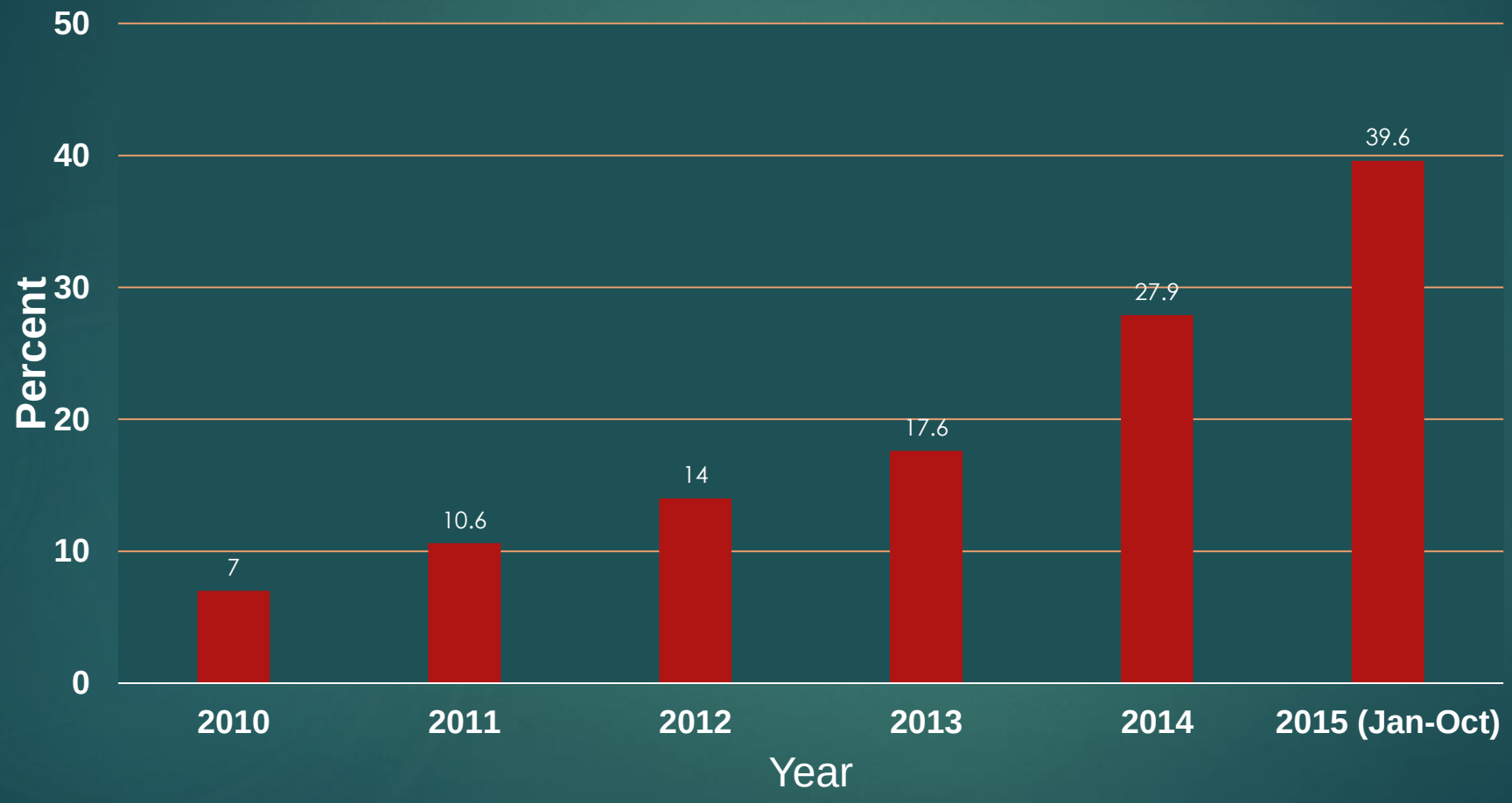
Updated October 2015



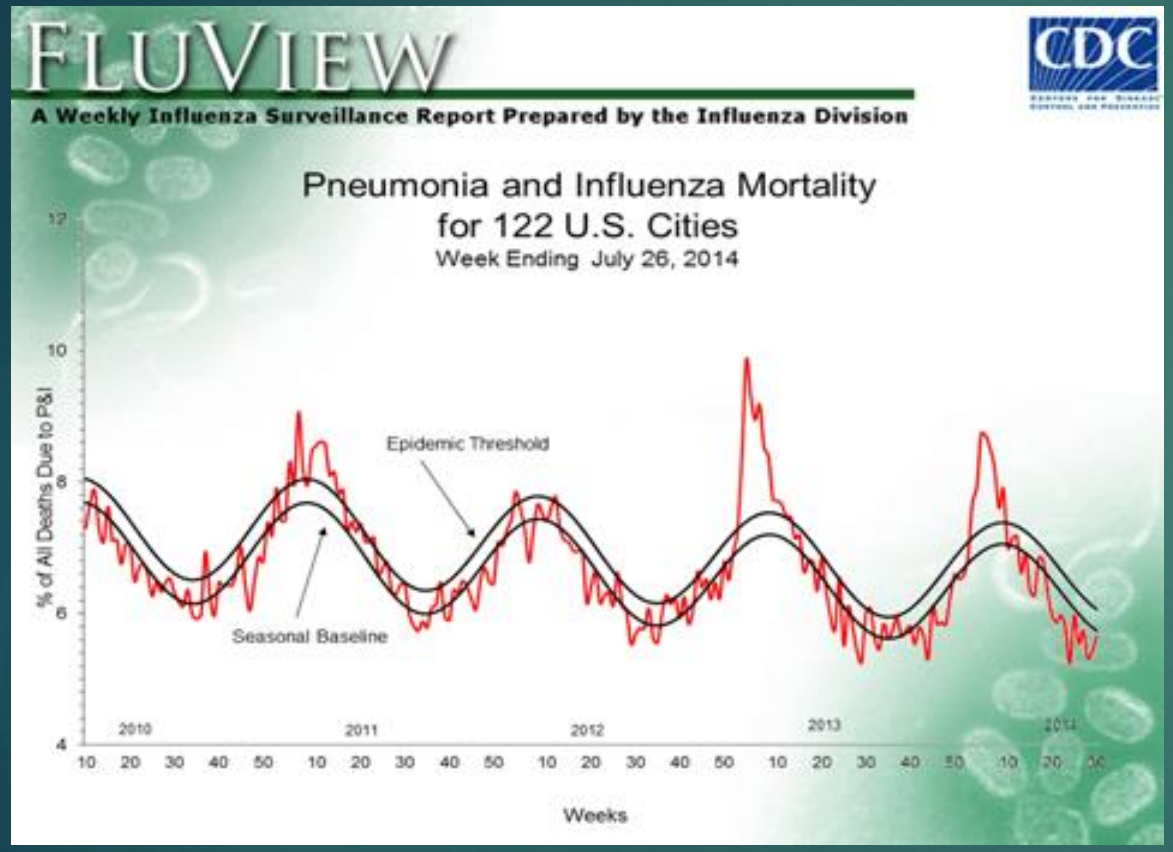
Do We Have Dynamic Electronic Systems?

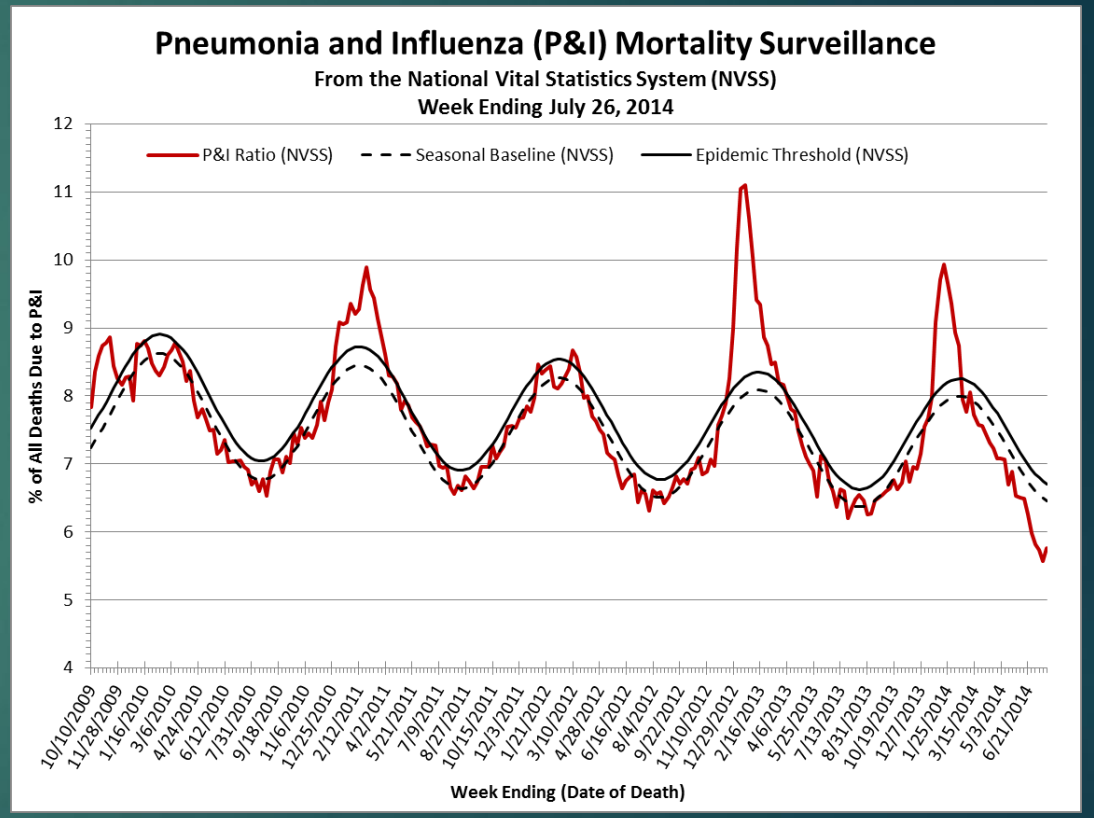
- **Contractual Performance vs. Dynamic Performance**
- **Configurability and interoperability?**
  - With medical examiner systems and electronic medical records
  - With funeral home systems
  - With VIEWS
- **Agility or mobility during times of disaster**
- **Workflow conscious while minimizing duplication**

Mortality Records Received by NCHS within 10 Days of the Date of Death

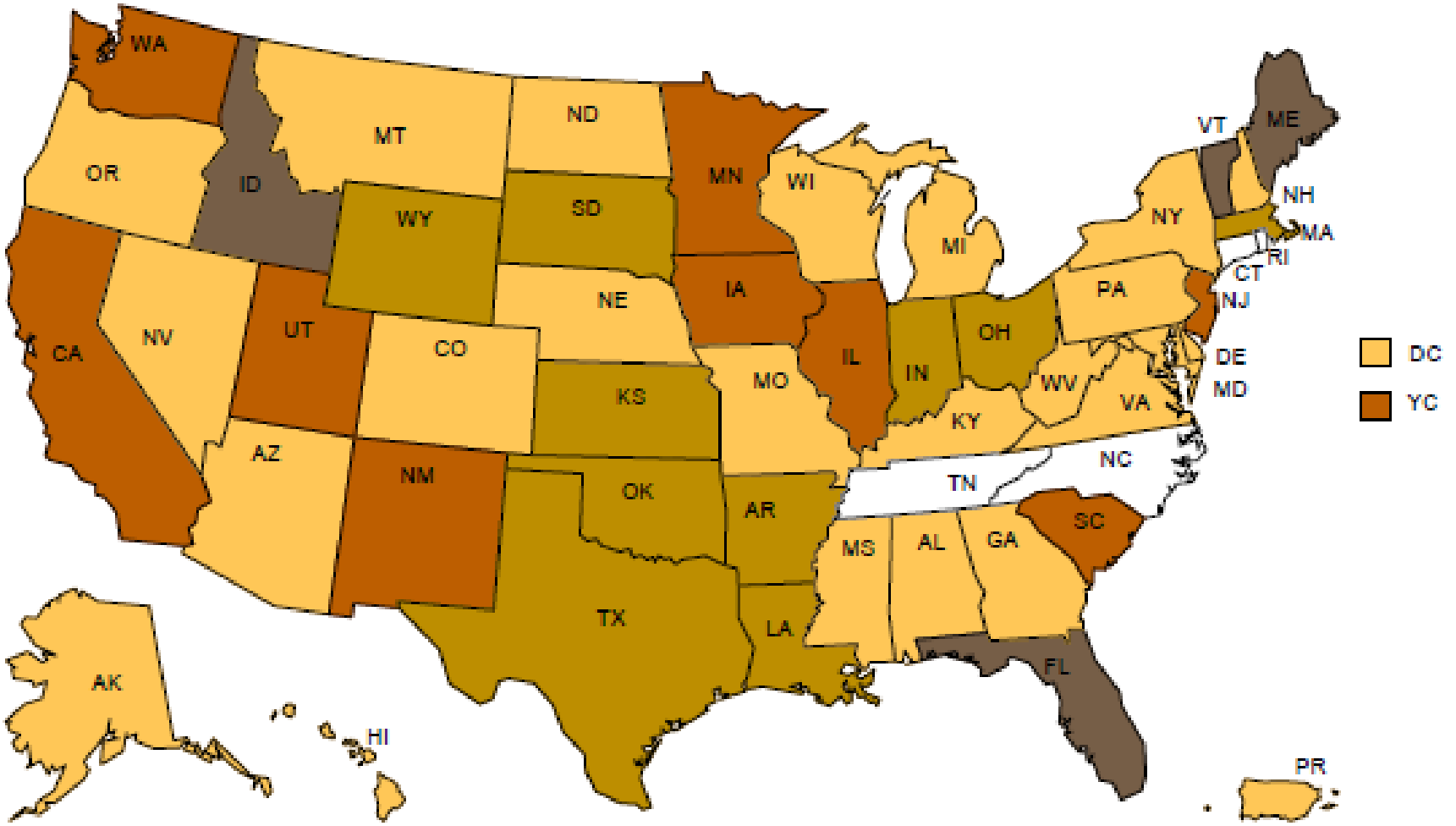


NVSS based P&I Mortality Surveillance will Replace existing 122 Cities Mortality Surveillance System

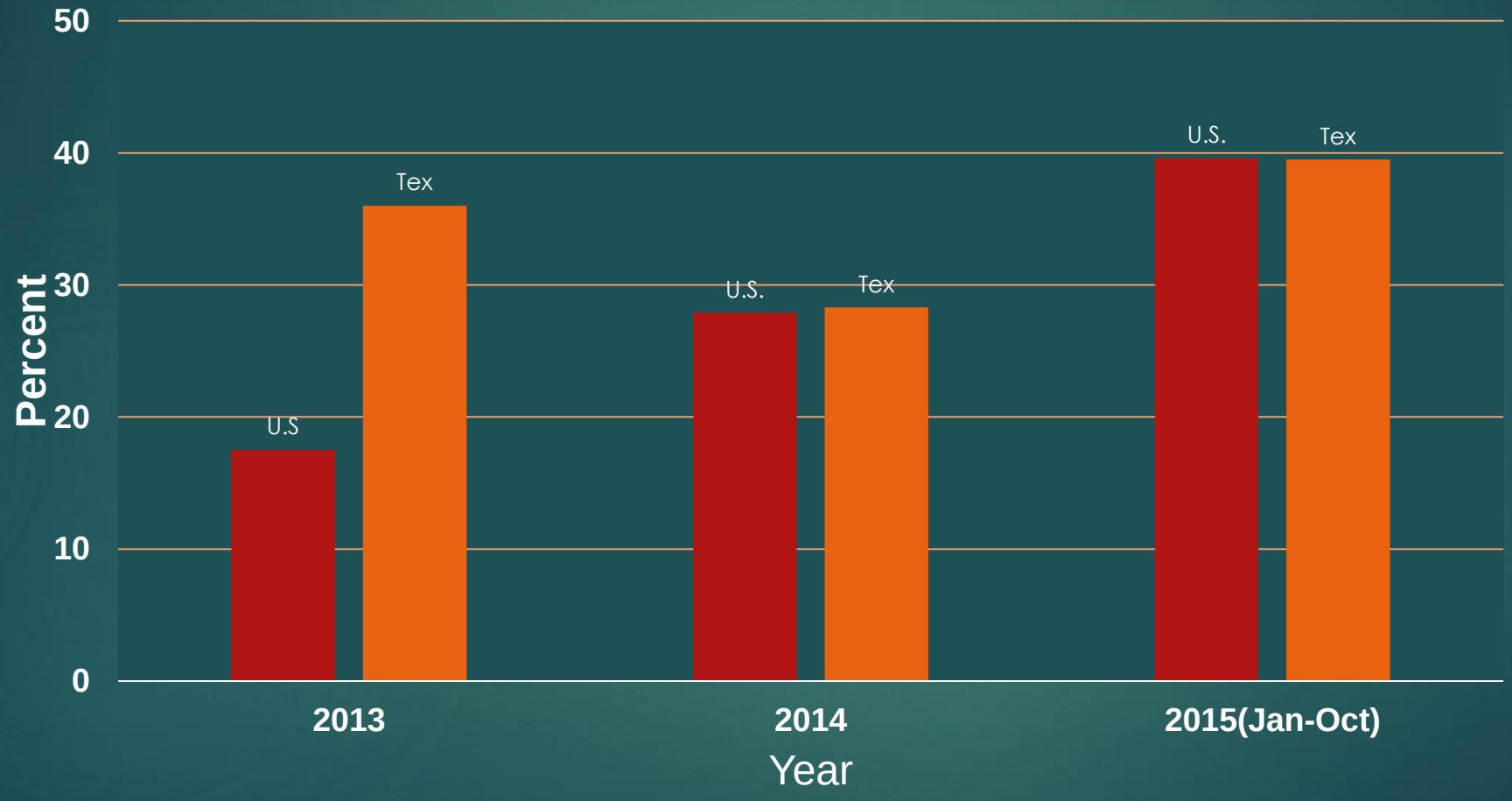




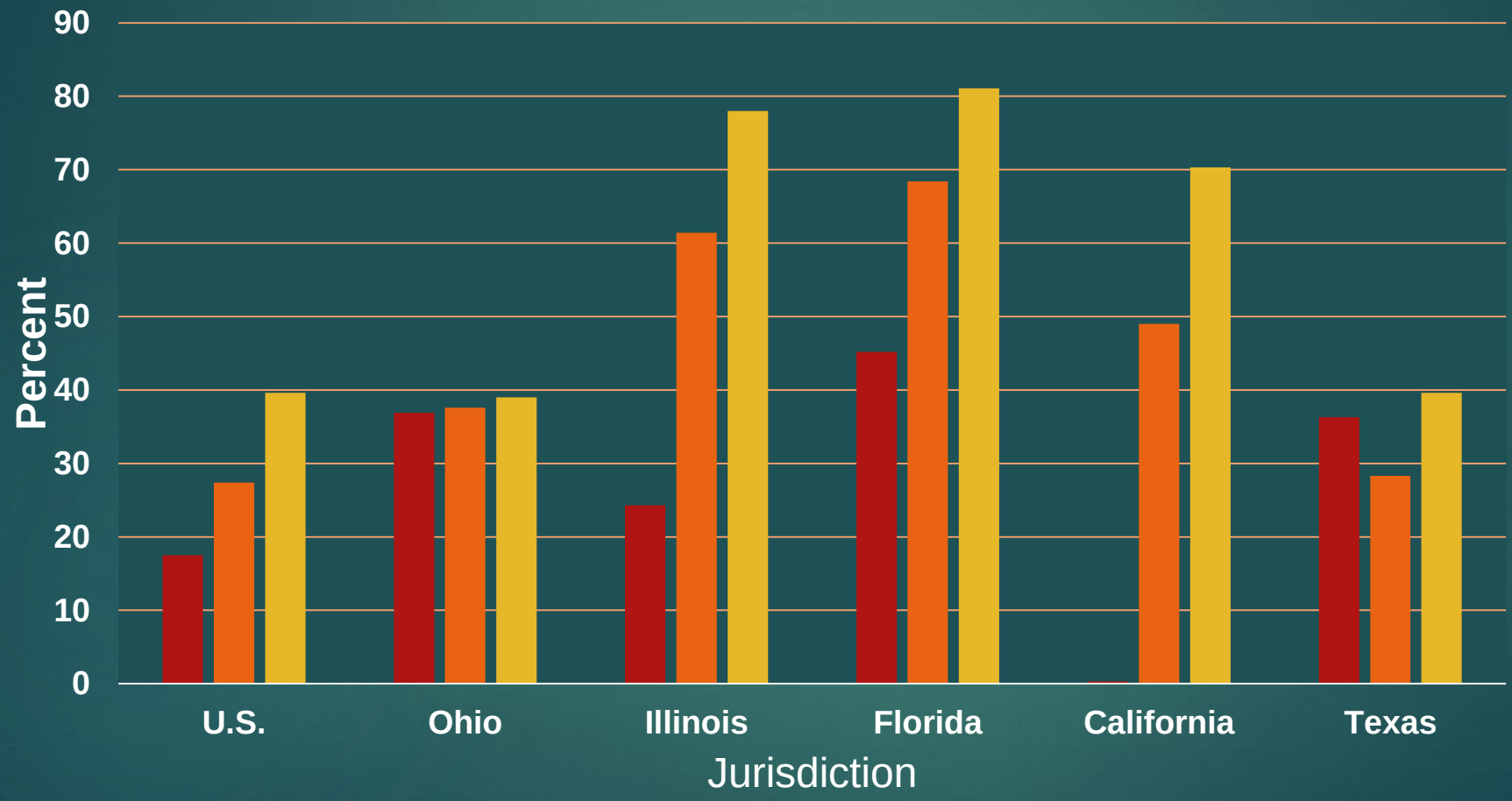
Proportion of 2015 Mortality Records Records Received (during January – October 2015) within 10 days of the Date of the Event by Registration Area



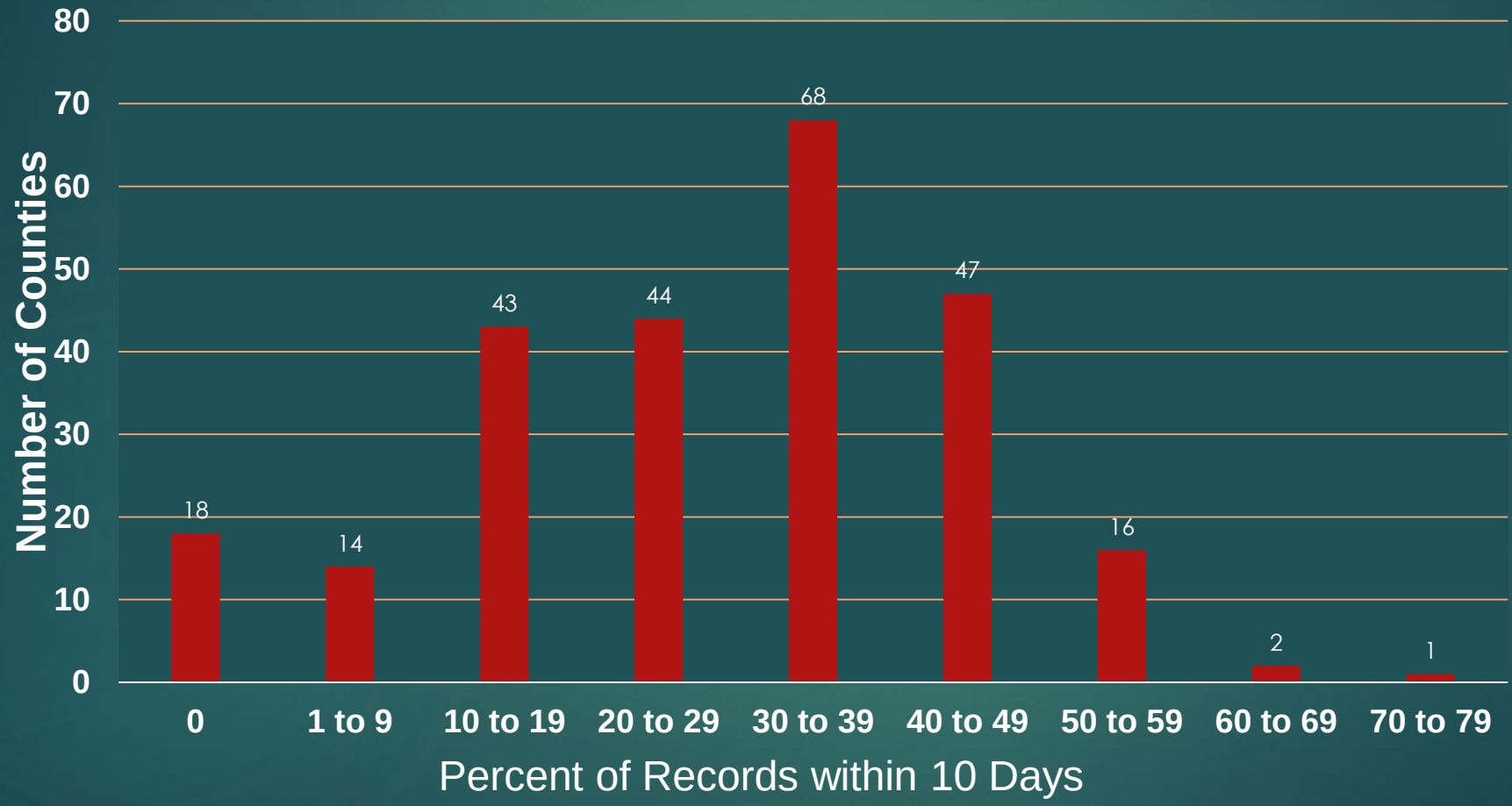
Mortality Records Received by NCHS within 10 Days of the Date of Death, U.S and Texas by Year



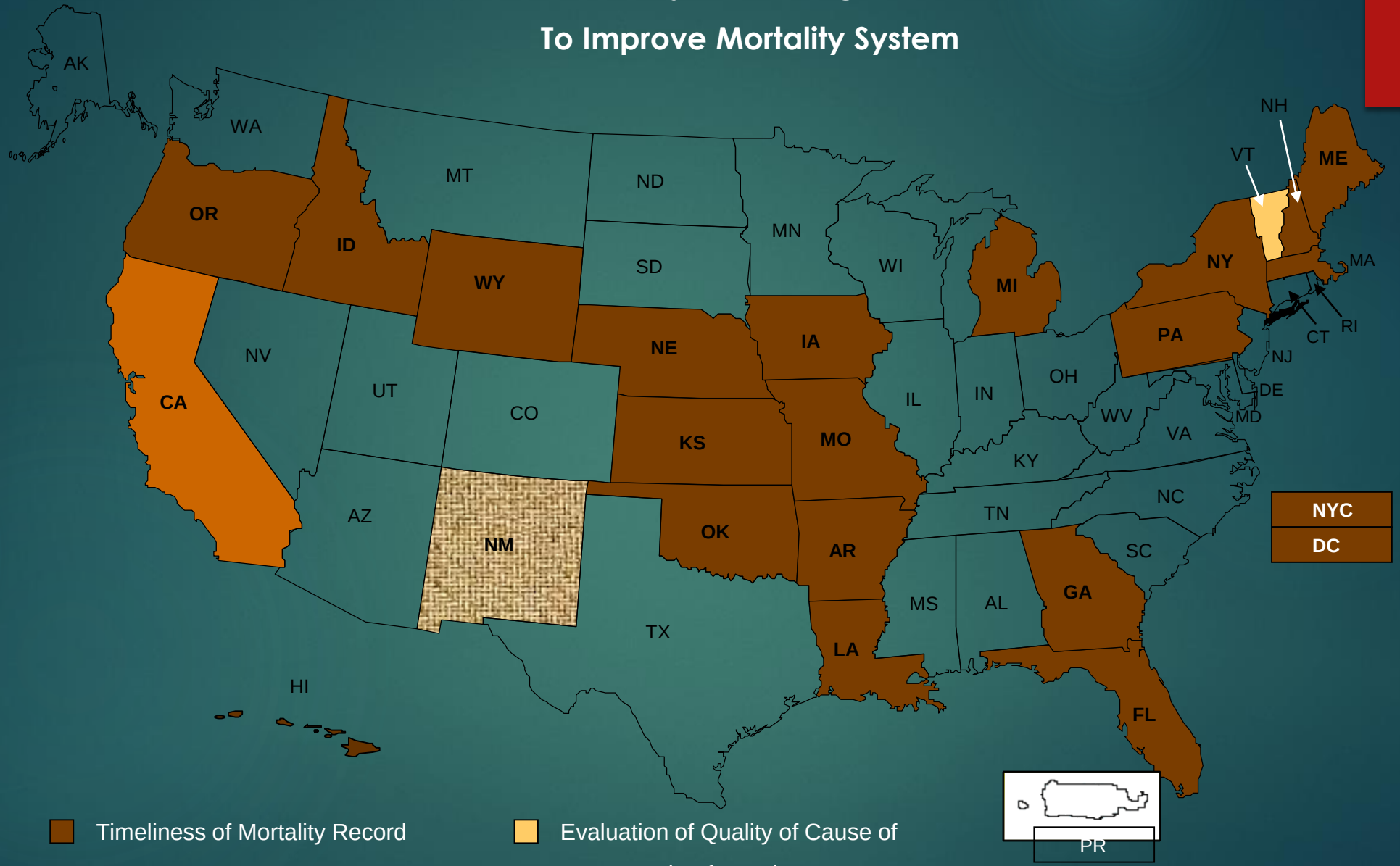
Percent of Mortality Records Received within10 days of the Date of Death for the 5 Largest States, Texas and US, 2013, 2014 and First 10 Months of 2015



Texas Mortality Records Received by NCHS within 10 Days of the Date of Death By Number of Counties, 2015



Special Project Funding To States To Improve Mortality System



Dynamic Vital Statistics System and “QUALITY”

Common Problems with COD Certification

- Ill-defined conditions
  - Reporting of symptoms or unknown cause
  - Cardiac/cardiopulmonary/respiratory arrest,
  - Senility or old age
- Non-specific processes or terminal conditions
  - Cancer without specification of site
  - Non-specific heart disease/CVD
  - Heart or renal failure
  - Pulmonary embolism
- Illogical sequences
  - Cause of death statements that contain conditions/diseases that are not logically linked in a proper sequence
- Difficulties associated with multiple chronic diseases
- Declining autopsy rates

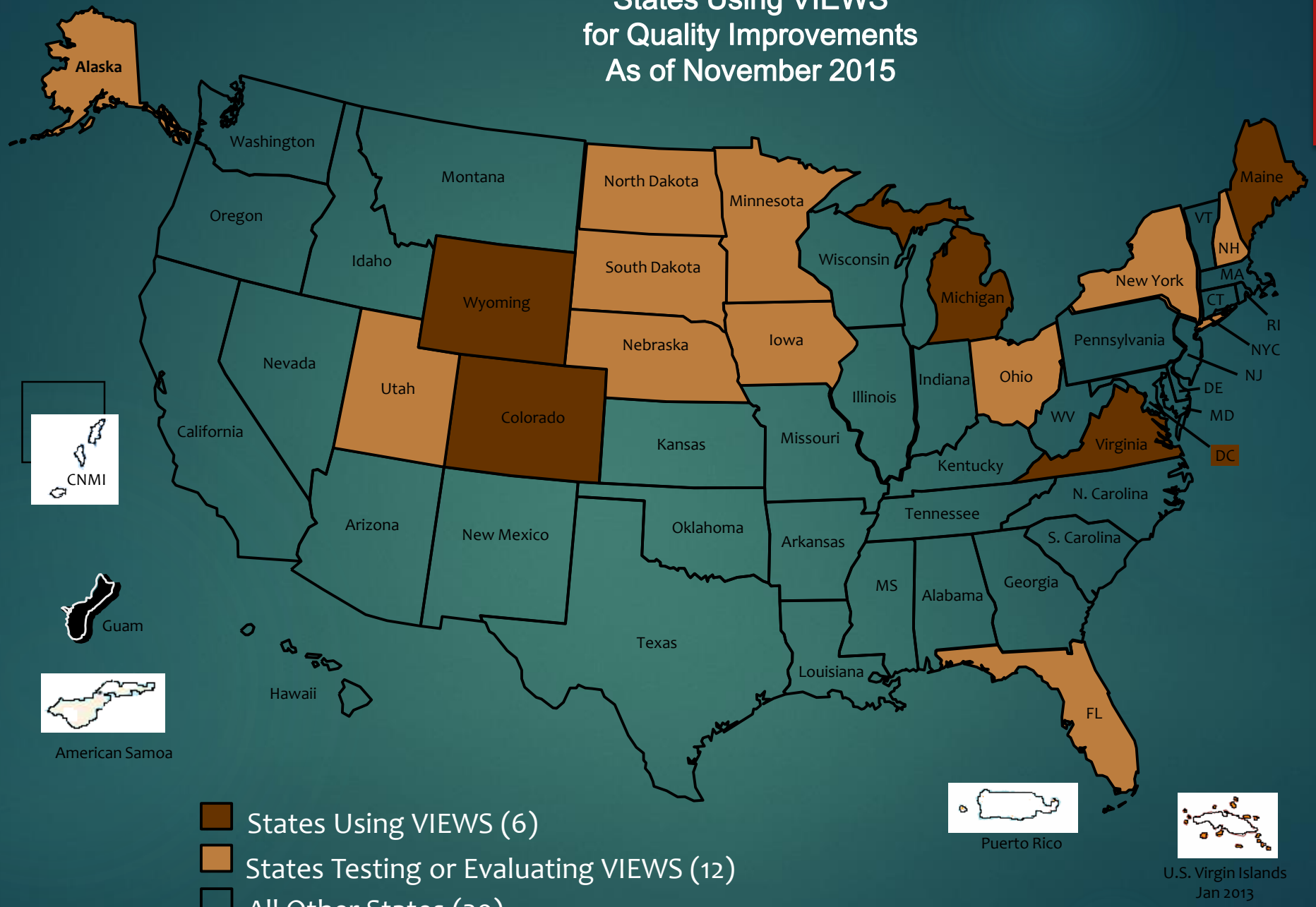
Current Quality Initiatives

- E-learning training for physicians
  - Working with Education and Training Services in CSELS to attach CE credits
- Development of Cause-of-Death Application
  - Working with Informatics Lab in CSELS
  - Quick reference guide for physicians with examples
- Collaboration with Association of American Medical Colleges (AAMC)
  - Disseminate COD training tools (e.g., e-learning, app)
  - Include COD certification as a core competency for residency training
- VIEWS (Validation and Interactive Edits Web Service)
  - Real-time edits and querying during electronic certification

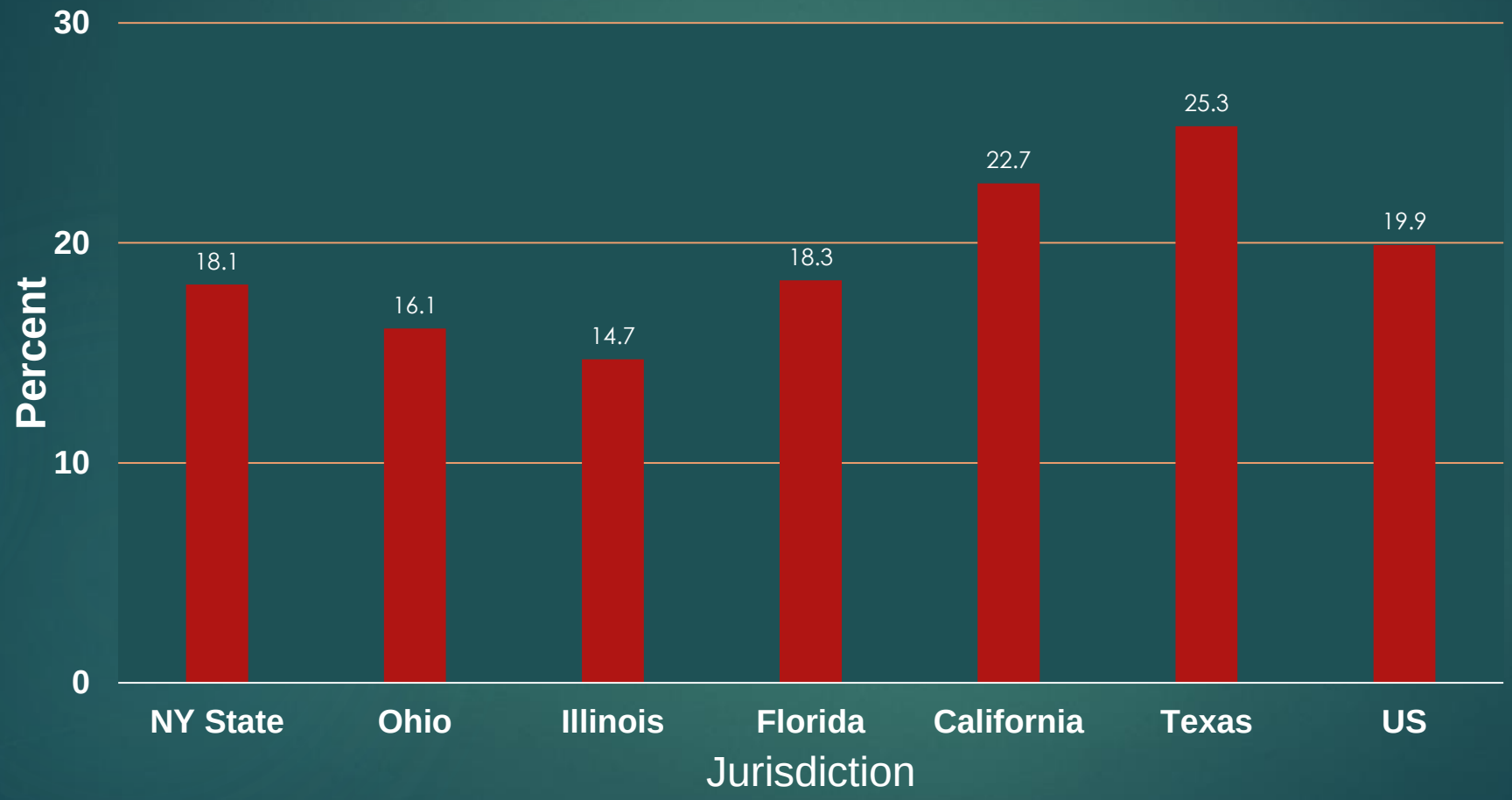
Current Quality Initiatives (cont.)

- Machine Learning Project
  - Funding provided to GA Tech University
  - ***Feasibility Study***: Machine learning algorithms and data from EMR to help physicians determine an optimal sequence of events leading to death
- **Quality-funded State Projects – NM and VT**
  - Evaluation of accuracy and quality of cause of death reporting
  - Comparison of death certificates with decedent medical records
- **NCHS COD Improvement Project**
  - Hiring Associate Service Fellow
  - Coordination of existing efforts and technical assistance to states
  - Review of quality studies and development of standard measures of quality

States Using VIEWS for Quality Improvements As of November 2015



Percent of Mortality Record Rejected In The 5 Largest States, Texas and US, January through October 2015



Death Investigation Systems:

Medical Examiners and Coroners

- Facilitating information sharing among ME/C
- Coordinating efforts with other stakeholders
  - ***Example: Co-chairing the White House Task Force on Medical Examiner/Coroner Systems***
- **Emphasis on drug overdose**

Drug overdose deaths: Investigation, diagnosis, and certification

AFP REVIEW ARTICLE

Recommendations for the Investigation, Diagnosis, and Certification of Deaths Related to Opioid Drugs

Gregory G. Davis MD MSPH and the National Association of Medical Examiners and American College of Medical Toxicology Expert Panel on Evaluating and Reporting Opioid Deaths

ABSTRACT: The American College of Medical Toxicology and the National Association of Medical Examiners convened an expert panel to generate evidence-based recommendations for the practice of death investigation and autopsy, toxicological analysis, interpretation of the toxicology findings, and death certification to improve the precision of death certificate data available for public health surveillance. The panel finds the following:

1. A complete autopsy is necessary for optimal interpretation of toxicology results, which must also be considered in the context of the circumstances surrounding death, medical history, and scene findings.
2. A complete scene investigation extends to reconciliation of prescription information and pill counts.
3. Blood, urine, and vitreous humor, when available, should be retained in all cases. Blood from the femoral vein is preferable to blood from other sites.
4. A toxicological panel should be comprehensive and include opioid and benzodiazepine analytes, as well as other potent depressant, stimulant, and antidepressant medications.
5. Interpretation of postmortem opioid concentrations requires correlation with medical history, scene investigation, and autopsy findings.
6. If death is attributed to any drug or combination of drugs (whether as cause or contributing factor), the certifier should list all the responsible substances by generic name in the autopsy report and on the death certificate.

Gregory G. Davis MD MSPH is an Associate Coroner/ Medical Examiner at the Jefferson County Coroner/ Medical Examiner Office and a Professor of Pathology at the University of Alabama at Birmingham.

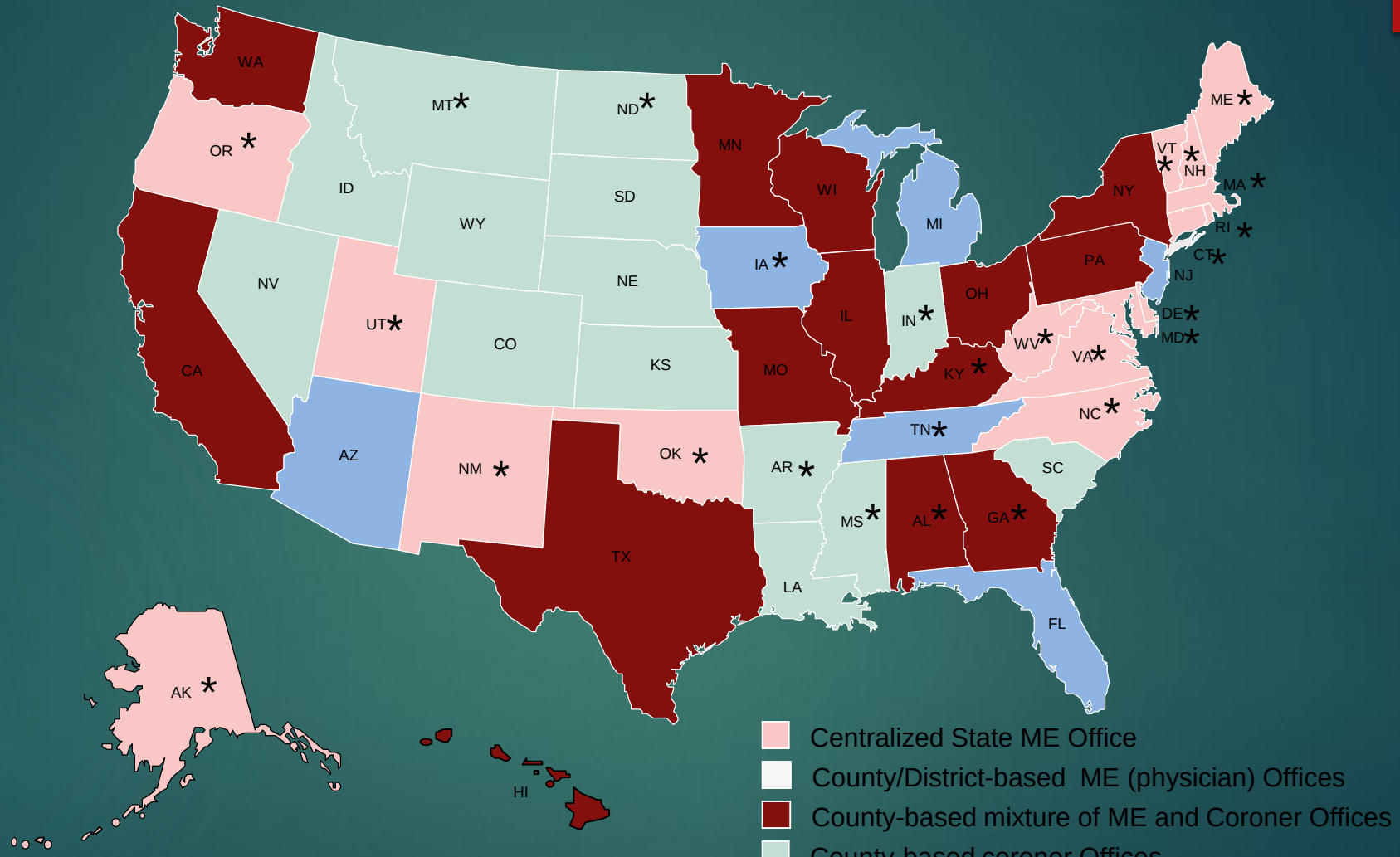
Contact Dr. Davis at: gdavis@uab.edu.

Acad Forensic Pathol 2013 3 (1): 62-76

Drug overdose deaths with drugs specified on death certificates by state death investigation system

Medicolegal Death Investigation System	Drugs specified Percent	Range
US, average	75 %	35-99 %
Centralized state medical examiner	92 %	69-99 %
Decentralized county or district medical examiner (physician)	71 %	43-94 %
Hybrid system: county coroner and medical examiners (state and/or county)	73 %	60-94 %
Decentralized county coroner	62 %	35-98 %

Death investigation systems



Sources:
National Institute of Justice, Scientific Working Group on Medical Death Investigation, Death Investigation Systems, 2011
Bureau of Justice Statistics, Census of Medical Examiner and Coroner Offices, 2004

Disaster-related deaths

Number of Disaster-related Deaths Identified					
	Red Cross	**FEMA**	**NOAA-NWS Storm Data**	**Other Agency (EOC, ME)**	**Vital Statistics (Search without names)**
Hurricane Ike – TX (2009)	38	?	20	74	4
April 27 Tornado – GA (2011)	15	?	15	15	6
Hurricane Sandy – NJ (2012)	34	~300	12	75	8

Death certification: Disaster related deaths

A Reference Guide for Certification of Deaths in the Event of a Disaster

Table of Contents

Determination of Disaster-related Deaths

Death

Did the Death Occur During One of the Following?

Weather Events
- Snow or Ice Storm
- Cold, Extreme
- Heat, Extreme
- Hurricane
- Earthquake
- Tornado
- Thunder
- Tsunami
- Volcanic Activity

Associated Events
- CO Exposure • Power Outage
- Wind Chill
- Wildfire • Drought • Duststorm
- Storm Surge • Wind • Flooding
- Landslide • Mudslide
- Flying Debris
- Lightning • Flash Floods • Hail
- Tidal Wave • Debris Flow
- Ash • Gases • Lava Flow

Human Induced Events*
- Radiation Emergency
- Chemical Spill
- Bombing or Blast Incident
- Transportation Incident

* Intentional and Unintentional Events

ASK YOURSELF

Was death caused by the **direct physical forces** of the event?

OR

Was death caused by the **consequences** of the disaster such as **unsafe or unhealthy conditions** during the event, pre-event (e.g., prep), or post-event (e.g., clean up)?

DIRECT Causes
- Blunt Force Trauma
- Burns
- Carbon Monoxide Poisoning
- Crushed
- Drowning
- Electrocution
- Falls
- Fire/Smoke Inhalation
- Hypothermia (cold)
- Hyperthermia (heat)
- Suffocation
- Traumatic Injury
- Radiation/Chemical Poisoning

INDIRECT Consequences
- Preparation for the disaster
- Exacerbations of Chronic Disease
- Evacuation
- Motor Vehicle Crash
- Loss/Disruption of Health Care
- Loss/Disruption of Utilities
- Loss/Disruption Transportation
- Repair or Clean Up Activities
- Psychosocial Stress/Anxiety
- Exposure to Industrial Hazards
- Returning to Unsafe/Unhealthy Environments or Structures

If YES

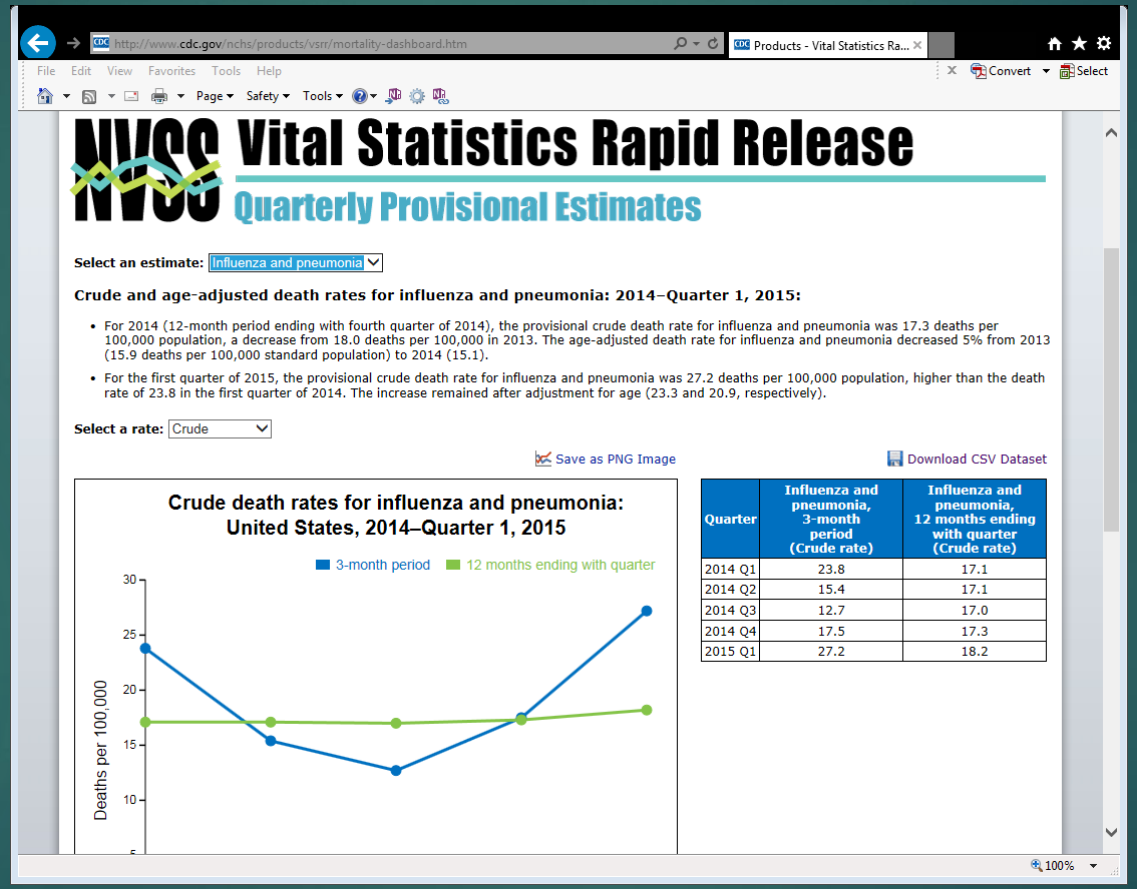
Record disaster type AND event name (e.g., Hurricane Sandy) on death certificate

Dynamic “Use” of Vital Statistics Program

EXAMPLES

Quarterly Provisional Estimates 2014–Quarter 1, 2015

http://www.cdc.gov/nchs/products/vsrr.htm



Quarterly Provisional Estimates Targeted for release in December 2015

1. All causes
2. Alzheimer's disease*
3. Cancer*
4. Chronic liver disease and cirrhosis*
5. Chronic lower respiratory diseases*
6. Diabetes*
7. Drug overdose
8. Falls, ages 65 and over
9. Heart disease*
10. HIV disease
11. Homicide
12. Hypertension*
13. Injury by firearms
14. Kidney disease*
15. Parkinson's disease*
16. Pneumonia and influenza*
17. Pneumonitis due to solids and liquids*
18. Septicemia*
19. Stroke*
20. Suicide*
21. Unintentional injuries*

* 15 leading causes of death in 2013

In Closing----
Beyond Registration

- Vital statistics is foundation of public health
- Performance has not live up to this characterization.
- "Connection" program
- Efficiency, timeliness, quality and usability of our program, our systems, and our data must be paramount.

Dynamic "Electronic" Vital Statistics System

Quality registered events and information flowing daily

Local Health Department, Hospital and/or Data Provider

State Vital Statistics

NCHS

Questions?

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